What is claimed is:

1. A method for nonmagnetic identification of an organism, comprising:

optically detecting a marking code of a marking element on the organism to be examined; and,

evaluating the detected marking code to identify the organism carrying the marking element, wherein the marking code includes a plurality of regions including at least three different optically detectable and machine evaluatable criteria.

2. The method as claimed in claim 1, wherein the optically detectable and machine evaluatable criterion include intensity of at least one of reflection, absorption, diffraction and refraction of light.

3. The method as claimed in claim 1, wherein the optically and machine evaluatable criterion include at least one of wavelength of at least one of reflection, absorption and diffraction of light, color and fluorescence of regions of the marking element.

4. The method as claimed in claim 1, wherein the differences in at least one of the intensity of at least one of the reflection, absorption, diffraction and brightness of light, wavelength thereof, color and fluorescence at the borders of respectively neighboring regions of the marking element is used as the marking code.

5. The method as claimed in claim 1, wherein the regions are encoded by a plurality of N different brightnesses.

6. The method as claimed in claim 1, wherein at least one of the regions and region boundaries are encoded by N^m numbers, wherein N and m are integers.

7. The method as claimed in claim 1, wherein the optical determination and machine evaluation of the marking element is performed at least semi-

automatically, and wherein the optical determination and machine evaluation of the marking code is performed fully automatically.

8. The method as claimed in claim 7, wherein, for the purpose of fully automatic determination, the edge gradients of neighboring regions of the marking element are optically determined.

9. The method as claimed in claim 8, wherein foreground regions belonging to at least one of a component and a criterion are combined to form fixed units.

10. The method as claimed in claim 9, wherein the combination is undertaken by run length encoding.

11. The method as claimed in claim 1, wherein image data are segmented into segments with the aid of predeterminable image data properties, wherein coherent regions are formed with the aid of an assignment of the segments with the aid of predeterminable assignment criteria, wherein coherent regions are filtered, and wherein coherent regions are at least one of analyzed and evaluated with the aid of predeterminable analytical criteria.

12. The method as claimed in claim 11, wherein the segmentation of the image data is carried out with the aid of the watershed algorithm.

13. The method as claimed in claim 11, wherein the segmentation of the image data is carried out by region growing.

14. The method as claimed in claim 11, wherein the segmentation of the image data is carried out by binarization.

15. The method as claimed in claim 1, wherein a CCD camera is used for optically detecting the marking code.

16. An apparatus for identifying an organism including a marking element, comprising:

a sensor for optically detecting a marking code of the marking element; and

an evaluation device for evaluating the detected optical signal, wherein the marking element is an annular marking element including at least one marking code, the marking code including a plurality of regions with optically detectable and machine evaluatable criteria.

17. The apparatus as claimed in claim 16, wherein the annular marking element includes a nonmagnetizable material.

18. The apparatus as claimed in claim 17, wherein the annular marking element includes plastic.

19. A method for in vivo small animal imaging identification, using the apparatus of claim 16.

20. The method as claimed in claim 1, wherein the optically detectable and machine evaluatable criterion include brightness of regions of the marking element as the marking code.

21. The method as claimed in claim 2, wherein the differences in at least one of the intensity of the reflection, absorption, diffraction and brightness of light and the wavelength thereof, the color and fluorescence at the borders of respectively neighboring regions of the marking element is used as marking code.

22. The method as claimed in claim 3, wherein the differences in at least one of the intensity of the reflection, absorption, diffraction and brightness of light and the wavelength thereof, the color and fluorescence at the borders of respectively neighboring regions of the marking element is used as marking code.

23. The apparatus of claim 16, wherein the marking code includes a plurality of regions including at least three different optically detectable and machine evaluatable criteria.

24. The apparatus as claimed in claim 17, wherein the annular marking element includes PVC.

25. The method of claim 1, for in vivo small animal imaging identification.

26. An apparatus for identifying an organism including a marking element, comprising:

sensing means for optically detecting a marking code of the marking element; and

evaluation means for evaluating the detected optical signal, wherein the marking element is an annular marking element including at least one marking code, the marking code including a plurality of regions with optically detectable and machine evaluatable criteria.

27. The apparatus as claimed in claim 26, wherein the annular marking element includes a nonmagnetizable material.

28. The apparatus as claimed in claim 27, wherein the annular marking element includes plastic.

29. The apparatus of claim 26, wherein the marking code includes a plurality of regions including at least three different optically detectable and machine evaluatable criteria.

30. The apparatus as claimed in claim 27, wherein the annular marking element includes PVC.

31. A marking element for placement on and identification of an organism,

comprising:

at least one optically detectable marking code, wherein the marking element is an annular marking element for placement on the organism and wherein the marking code includes a plurality of regions with optically detectable and machine evaluatable criteria.

32. The marking element of claim 31, wherein the marking code includes a plurality of regions including at least three different optically detectable and machine evaluatable criteria.

33. A label including the marking element of claim 31.

34. A method for nonmagnetic identification of an organism, comprising:

placing a marking element, including an optically detectable marking code, on an organism to be examined, wherein the detectable marking code is evaluatable to identify the organism, and wherein the marking code includes a plurality of regions including at least three different optically detectable and evaluatable criteria.

35. The method as claimed in claim 34, wherein the optically detectable and evaluatable criteria include intensity of at least one of reflection, absorption, diffraction and refraction of light.

36. The method as claimed in claim 34, wherein the optically and evaluatable criteria include at least one of wavelength of at least one of reflection, absorption and diffraction of light, color and fluorescence of regions of the marking element.

37. The method as claimed in claim 34, wherein the differences in at least one of the intensity of at least one of the reflection, absorption, diffraction and brightness of light, wavelength thereof, color and fluorescence at the borders of respectively neighboring regions of the marking element is used as the marking code.

38. The method as claimed in claim 34, wherein the regions are encoded by a plurality of N different brightnesses.

39. The method as claimed in claim 34, wherein at least one of the regions and region boundaries are encoded by N^m numbers, wherein N and m are integers.